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ABSTRACT

This 1993 report is the second issue of the "State of the State--Education Performance in North Carolina," which monitors the health of North Carolina's education system as a whole and compares it to national and regional performance data. The first two sections define characteristics of North Carolina and its schools. Information about the public school population, enrollment, and funding is included. The third section compares the performance of North Carolina students to those in the nation and other states on the Scholastic Aptitude Test, The National Assessment of Educational Progress, and the Iowa Test of Basic Skills. Section 4 provides information on the performance of student subgroups, pointing out areas in which discrepancies exist. Generally, the more advantaged the subgroup, the greater the discrepancy in scores between the state and national averages for that subgroup. The gap in achievement levels between white and black students is evident in all subjects at all grade levels. Comparisons are based on both national and state measures. The fifth section focuses on fourth-grade student performance in reading. Data show that although a higher percentage of black fourth-grade students scored at or above the basic level than did black students in the Southeast and in the United States as a whole, the performance gap between white and black students in North Carolina remains substantial. (LMI)

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State of the State

Education Performance in North Carolina, 1993

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EA 026 809

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Notes

1. Data presented in this report have been previously presented in formal reports.

2. Throughout this report the latest available information is presented, including 1990 Census data. Where possible, projections are made to the 1992-93 school year. Financial information generally lags one year behind so the latest data are for 1991-92. State end-of-grade and end-of-course tests and the Scholastic Aptitude Test data are for the 1992-93 school year. The results from the National Assessment of Educational Progress are from 1992. Complete references are provided on the back cover.

3. The term "enrollment" and the statistical definition of "membership" are used interchangeably.

4. This report uses the following conventions, unless the need for clarity or emphasis require otherwise: (a) state high school end-of-course test scores are reported as percentiles; state end-of-grade tests, the Scholastic Aptitude Test and National Assessment of Educational Progress scores are shown either as average scale scores, as percentages, or as proficiency levels; (b) percentage totals may not add to 100 because of rounding; (c) most population and finance numbers are reported to hundred thousandths and other numbers are rounded to hundredths.

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Introduction

This is the second issue of the *State of the State-Education Performance in North Carolina* , a report required by the School Improvement and Accountability Act, enacted by the General Assembly of North Carolina in 1989. The *State of the State-Education Performance in North Carolina* is one of several reports provided annually to evaluate the state's public school system. It is the only report that monitors the health of North Carolina's education system as a whole and compares it to public school systems in the nation and other states.

Like other reports that evaluate North Carolina public schools, the *State of the State* report uses student academic performance as a primary indication of how well our schools are serving the educational needs of children and youth. It also includes information that helps define the context within which the state's schools operate. Following is a brief summary of what each section of the report contains.

Context

- The first two sections of the report define characteristics of North Carolina and its schools. Included in these sections is information about public school population, enrollment, and funding.

Student Achievement

- The third section compares the performance of North Carolina students to those in the nation and other states on the Scholastic Aptitude Test, the National Assessment of Educational Progress, and the Iowa Test of Basic Skills.

- The fourth section provides information on the performance of student subgroups, pointing out areas in which discrepancies exist. Comparisons are made based on both national and state measures.

- The fifth section focuses on student performance in a major academic area. For a number of reasons, reading was selected for this year's focus. One, reading performance has been identified as a major focus both by the State Board of Education and by the State Superintendent. Two, it is one of the first two areas of the state's revised Standard Course of Study available in the schools and tested on the new end-of-grade tests. Additionally, 4th grade reading results from the National Assessment of Educational Progress are of particular interest, since the results reflect the impact of the state's increased emphasis on improving reading performance.

Section 1. The Context

As North Carolina refines and works toward its educational vision and goals, the context within which the state's public schools operate provides a larger picture to guide and advise important decisions. The term "context" embraces many parts of the whole and includes information about the state's population, the characteristics of education funding sources and expenditures, the number of students enrolled in the public schools and the personnel who help to educate them.

Context is significant for several reasons: it defines the resources that support the educational system that serves North Carolina children and youth; it defines the families closely linked to the mental and physical health of our student population; and it includes factors that directly or indirectly impact student achievement. The one word that best summarizes the context within which the North Carolina public schools are operating, and will continue to operate throughout this decade, is "change."

Population

In 1990 North Carolina had a total population of 6.6 million persons: 75.6 percent white, 22.0 percent black, 1.2 percent American Indian, 1.2 percent other including Asian. Approximately 1.2 percent were of Hispanic origin. In 1990, 51.5 percent of the state's population was female.

Of the 72 percent of the North Carolina households that contain families, 56 percent contained a married couple. About 25 percent contained a single parent with children. Currently, the number of divorces in North Carolina is increasing faster than the U.S. average, placing more and more children in households where they will be raised by single parents, in most cases by their mother.

Educational Attainment by Race (Persons 25 Years and Older) (Percentages)

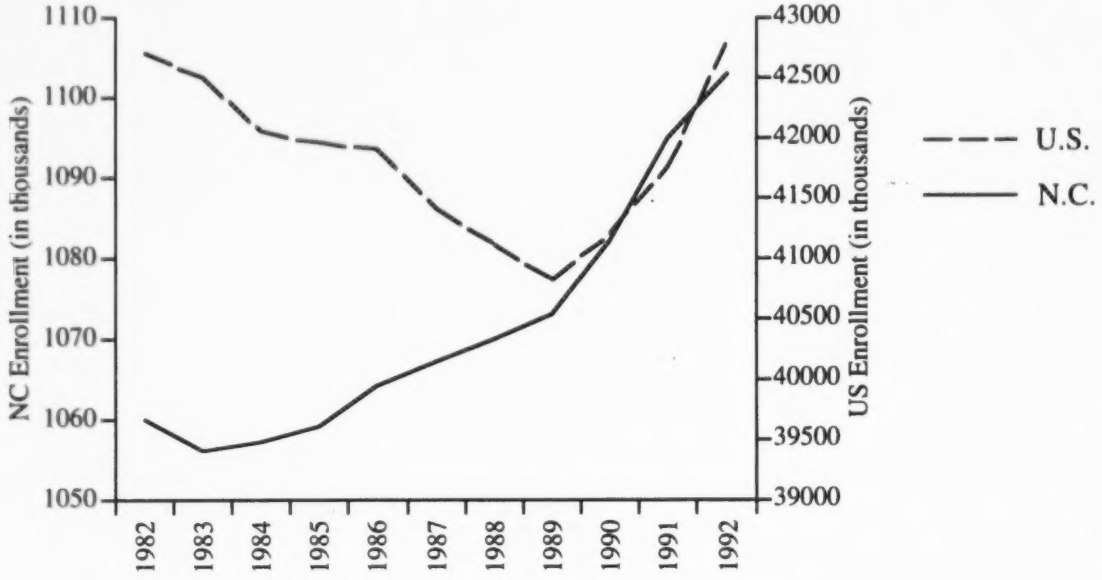
	White	Black	American Indian
Less than high school	26.9	41.9	48.5
High school graduate	29.2	28.8	26.5
Some college	24.6	20.0	17.1
Bachelor's degree	13.3	6.7	5.6
Graduate/professional	6.0	2.7	2.4

Family Profile (1990 Census)

Mothers in the labor force	76.9%
Both parents in labor force	74.8%
Single-parent families	26.7%
Children (6-17 year old) below poverty level	16.2%
Average household income	$38,063
Per-capita income	$12,650

Public School Enrollment

From 1981 to 1983, public school enrollment in the United States declined sharply and then, in 1984, began to steadily increase. In North Carolina the decline was more gradual and continued until 1989. In 1990 enrollments began to increase and are expected to continue to rise through this decade.



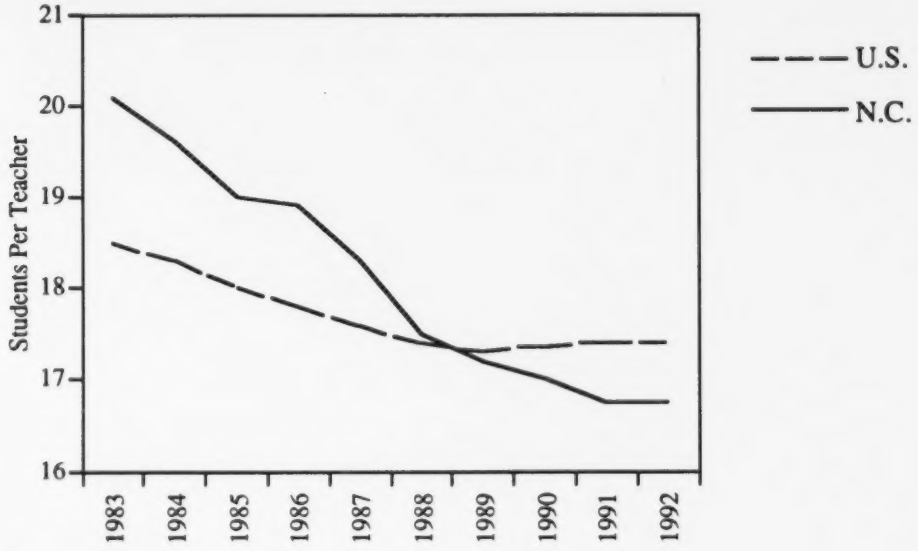
For the 1991-92 school year, there was a total school-age population of just over 1.1 million, of which 1.086 million were enrolled in public schools. North Carolina ranks tenth of all states in both population and number of students in public schools.

The racial/ethnic composition of the North Carolina public school population is somewhat different from the state's general population. Racial composition of the state's public schools in 1992-93 was 67.4 percent white, 29.7 percent black, 1.3 percent American Indian, and 1.5 percent other. There have been slight increases in the number of Asian and Hispanic students in the North Carolina public schools.

Public School Personnel

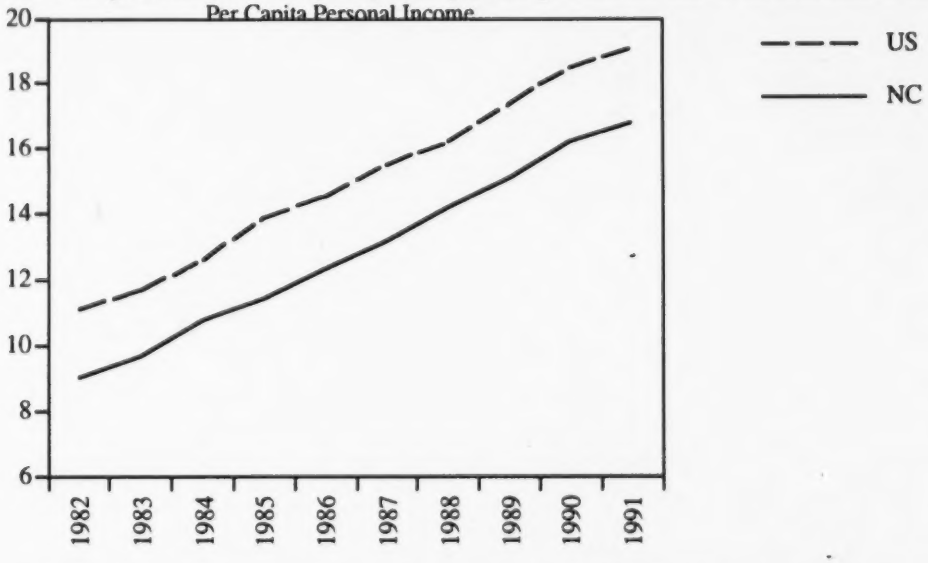
There are 1,959 public schools in North Carolina employing approximately 124,000 full time personnel, over half of whom are teachers. There are 5,000 administrators, or 4 percent of the total public school employees. The remaining 55,700 personnel include guidance counselors, librarians, teacher assistants, and clerical and service workers.

North Carolina has improved its student/teacher ratio considerably since 1980, particularly after the implementation of the Basic Education Program in 1986.

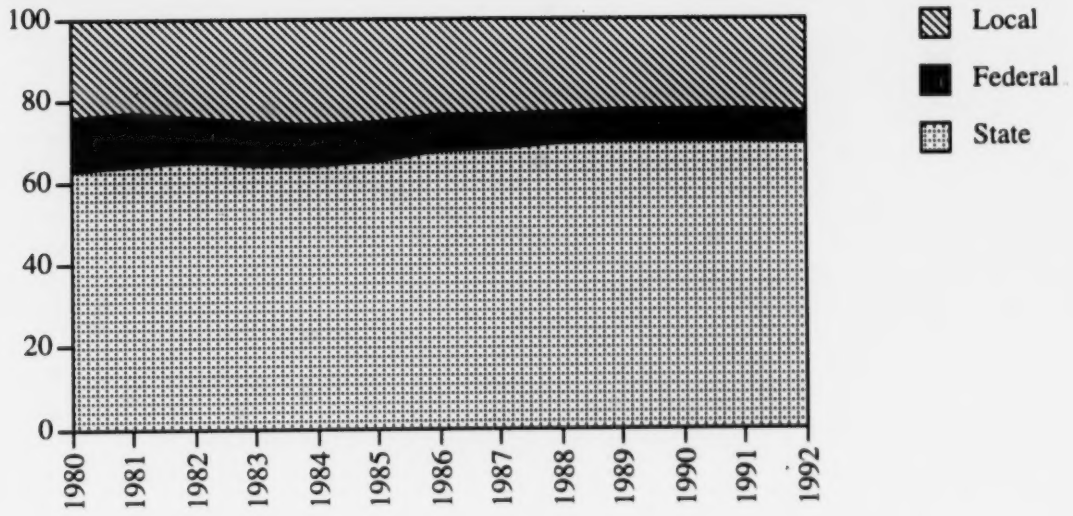


Public School Funding

North Carolina ranked 35th in per capita personal income in 1991, and 38th in per capita tax collections by state and local governments. Ten-year growth patterns parallel the nation on both indicators.



Almost seventy percent of the cost of operating public schools in North Carolina is borne by state government, while the national average for state support is under 50 percent. Local governments provide 45 percent nationwide, while in this state it is less than 23 percent. Over the past ten years, the federal share of school support has declined sharply in North Carolina and stands at 8 percent today compared to 13 percent in 1979-80. This percentage is similar to federal funds provided other states.



Current Expense Expenditures, in millions (1991-92)

State	$3,212	69.1%
Federal	373	8.0%
Local	1,064	22.9%
Total	$4,639	

The per student expenditure (1992-93) in North Carolina is $4803, compared to the national average of $5616.

The state continues to lag the national average for teacher salaries.

North Carolina Average	$29,108
National Average	$35,000
N.C.'s National Rank	37

Section 2. Student Achievement

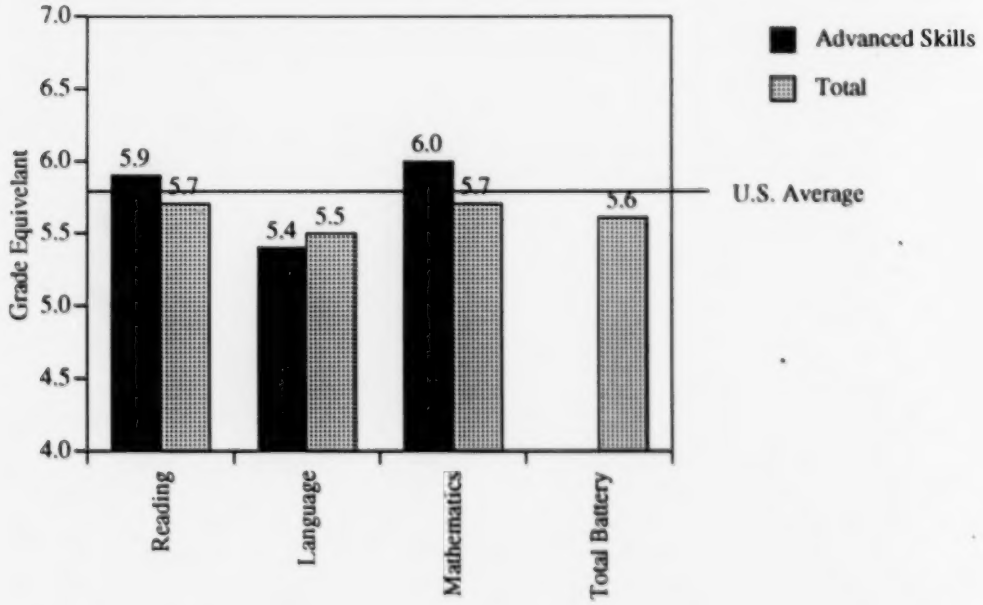
A fundamental goal of North Carolina's public school system is to help all students reach their highest potential for academic achievement. The extent to which the state's schools have achieved this goal is examined in this report in three ways: by looking at national comparisons, by looking at performance of student subgroups, and by focusing on one particular area of academic achievement.

National Comparisons

North Carolina Norm-Referenced Testing Program: Iowa Test of Basic Skills

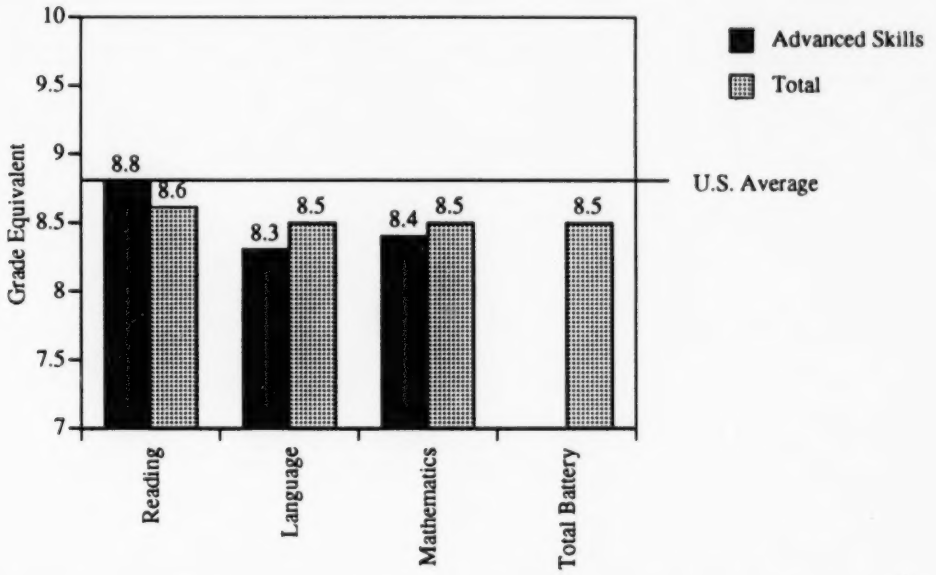
For a number of years North Carolina administered the California Achievement Tests (CAT) to all students in grades 3, 6, and 8. However, recent curriculum improvements in the elementary grades required that a different means be developed for measuring student performance. Beginning in 1993, a new series of state-developed tests were administered to all students in grades three through eight, and the state no longer administers the CAT. However, to allow for comparisons with national indicators of student achievement, the state provides for the administration of a nationally norm-referenced test to a sample of North Carolina students that is representative of all students. The Iowa Test of Basic Skills (ITBS) was selected and was administered by the Department of Public Instruction to a sample of fifth grade and eighth grade students for the first time in 1993. The results are summarized in the charts that follow.

Fifth Grade



The average for fifth-grade students is below the national norm on the total battery and on the total for reading, language and mathematics. They scored above the national norm on advanced skills in both reading and mathematics. However, the average fifth grader scored well below the national norm in advanced language skills.

Eighth Grade

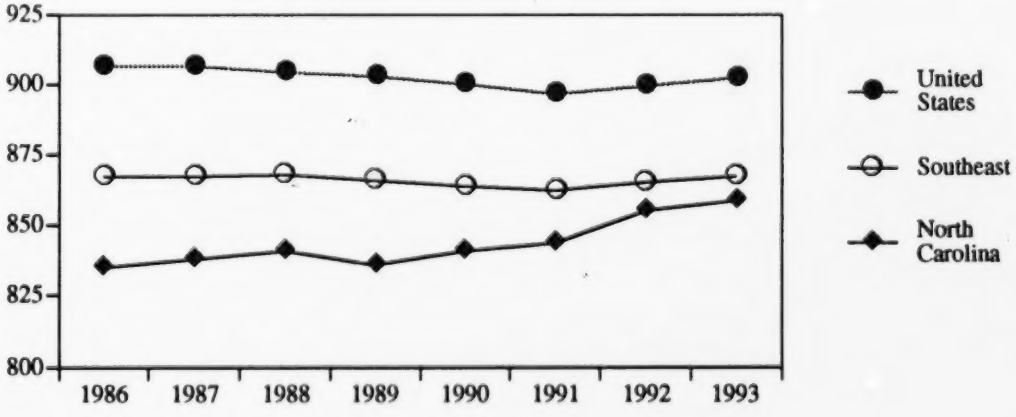


The average for eighth grade students is below the national norm for the total battery, but is at the national norm for advanced reading skills. The average eighth-grade student scored below the national norm in both total language and total mathematics.

Scholastic Aptitude Test

Since 1985, the trend for North Carolina scores on the SAT has been steadily upward, except for 1989, when a drop of 4 points caused the state to place last

Average Total SAT Scores: 1986-1993



among all the states. Since then, the progress has been substantial, increasing to 859 (total score) in 1993

An increase of 15 points between 1989 and 1993 is particularly encouraging when compared to the 1-point decline in the national average for the same period. Compared to the southeast average, the gap has been narrowed from 33 points to 14 points during the period. North Carolina ranked 21st out of 24 states with at least 40 percent of seniors taking the SAT in 1993.

SAT Scores for Selected States
(Percent Taking SAT in Parentheses)

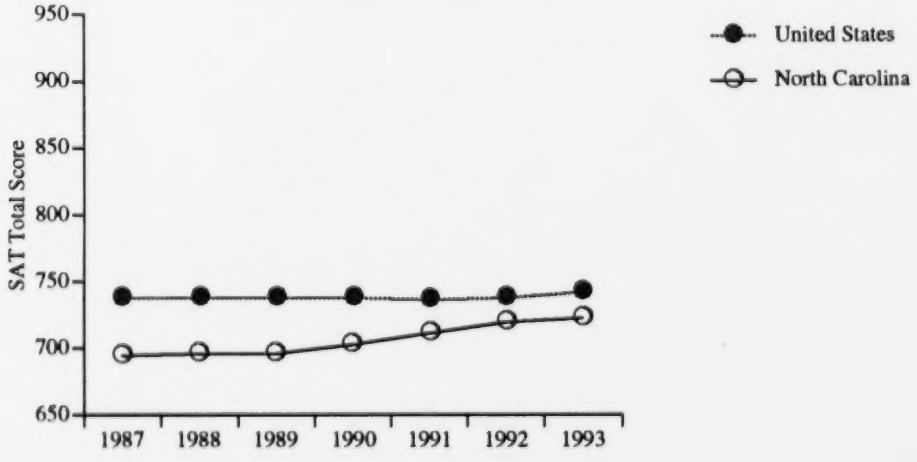
State	1991 Total	1992 Total	1993 Total	1993 Rank*	Change 1990-1993
Connecticut (88%)	897	900	904	6	+ 3
D.C. (76%)	840	842	846	22	- 4
Florida (52%)	882	884	882	17	- 2
Georgia (65%)	844	842	844	23	0
Indiana (61%)	865	868	869	20	+ 2
New Hampshire (78%)	921	923	929	2	+ 1
New York (74%)	881	882	887	13	+ 5
North Carolina (60%)	844	855	859	21	+ 18
Oregon (56%)	922	925	933	1	+ 10
South Carolina (61%)	832	831	838	24	+ 4
Virginia (63%)	890	893	894	10	- 1
Washington (52%)	913	916	921	3	- 2

*Out of 24 states with at least 40 percent of seniors taking the SAT in 1993

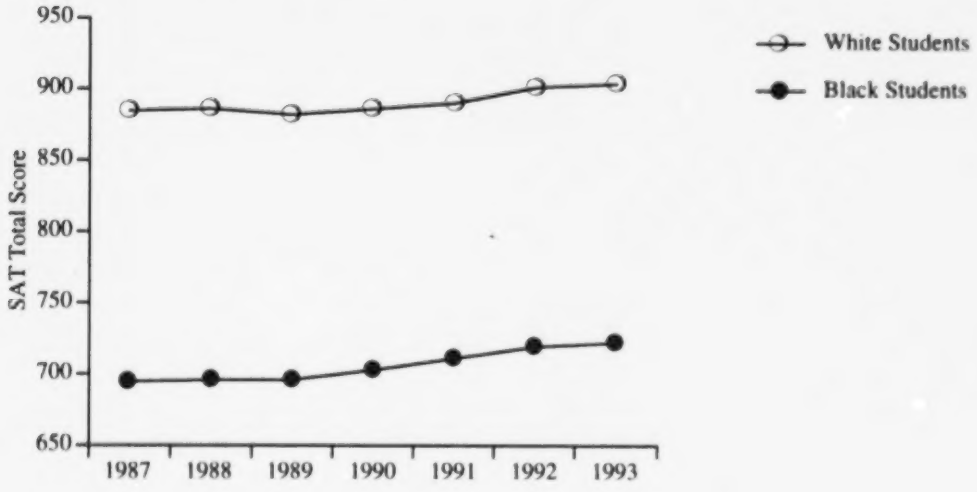
Of particular concern is that despite an increase over time, only 60 percent of North Carolina graduates takes the SAT.

While it is encouraging that black students in North Carolina have made greater gains than white students and compare favorably with black students nationally, it is discouraging that they continue to score 182 points behind white students. American Indian students lag behind white students by 129 points.

United States and North Carolina SAT Scores
Black Students



North Carolina SAT Scores for Black and White Students



National Assessment of Educational Progress (NAEP)

To date, NAEP comparisons can be made for eighth grade mathematics test results for 1990 and 1992 and for fourth grade mathematics and fourth grade reading for 1992. Descriptions of each of three proficiency levels are given on the charts, along with the percent of students who reached those levels.

Eighth Grade Mathematics

Proficiency Descriptions

BASIC LEVEL	This level of performance signifies an understanding of arithmetic operations-including estimation-on whole numbers, decimals, fractions, and percents.
PROFICIENT LEVEL	Students at this level should apply mathematical concepts and procedures consistently to complex problems.
ADVANCED LEVEL	Students at the advanced level should be able to reach beyond the recognition, identification, and application of mathematical rules in order to generalize and synthesize concepts and principles.

1992 Average Public School Proficiency-Eighth Grade Mathematics
(Change From 1990 in Parentheses)

Level	North Carolina	Southeast	Nation
Advanced	1% (0)	1% (-1)	3% (+1)
Proficient	14% (+4)	15% (+2)	20% (+3)
Basic	38% (+5)	37% (+4)	38% (0)
Below Basic	47% (-9)	47% (-5)	39% (-4)

North Carolina students are moving out of the below basic category in eighth grade mathematics and into the basic and proficient levels at a higher rate than the Southeast and the Nation, but while the percentage of students who are below basic is the same as the Southeast, it is considerable higher than for the Nation as a whole.

Fourth Grade Mathematics

Proficiency Descriptions

BASIC LEVEL	Students should show some evidence of understanding mathematical concepts and procedures.
PROFICIENT LEVEL	Students should consistently apply integrated procedural knowledge and conceptual understanding to problem solving.
ADVANCED LEVEL	Students should apply integrated procedural knowledge and conceptual understanding to complex and non routine real-world problem solving.

1992 Average Public School Proficiency

Level	North Carolina	Southeast	Nation
Advanced	2%	1%	2%
Proficient	11%	11%	16%
Basic	39%	38%	41%
Below Basic	48%	50%	41%

Results in fourth grade mathematics achievement are similar to the results for eighth grade mathematics. North Carolina's performance is similar to the Southeast, but is somewhat behind the Nation. A large percent of fourth graders in North Carolina are classified as below basic.

Fourth Grade Reading

Proficiency Descriptions

BASIC LEVEL	Students should demonstrate an understanding of the overall meaning of what they read. They should be able make relatively obvious connections between the text and t heir own experiences.
PROFICIENT LEVEL	Students should be able to demonstrate an overall understanding of the text, providing inferential as well as literal information. The connection between the text and what the student infers should be clear.
ADVANCED LEVEL	Students should be able to generalize about a reading selection; they should be able to judge texts critically and give thorough answers that indicate careful thought.

1992 Average Public School Proficiency

Level	North Carolina	Southeast	Nation
Advanced	4%	3%	4%
Proficient	22%	19%	24%
Basic	53%	52%	57%
Below Basic	47%	48%	43%

North Carolina and the United States had the same percentage or very nearly the same percentage of students scoring at or above the advanced and proficient levels in fourth grade reading. The state consistently outperformed students in the Southeast.

Performance of Student Subgroups

North Carolina's success depends upon the success of *all* student subgroups in school. With a primary goal of high academic achievement for *all* students, North Carolina's public schools have reason for concern. Analysis of student test scores in North Carolina indicate that almost every subgroup of students scores lower than their national counterparts.

Generally, the more advantaged the subgroup, the greater the discrepancy in scores between the state and national averages for that subgroup. For example, North Carolina A students have larger discrepancies with their national counterparts than do students who receive B's and C's. Similar patterns are evident in results from the National Assessment of Educational Progress. Advantaged urban students in North Carolina scored 12 points lower than advantaged urban students nationally, while the discrepancy between state and national disadvantaged urban students was 7 points.

Discrepancies among all student subgroups warrant attention, but the gap between black students and white students is of special concern. Nationally and in North Carolina this gap has been characterized as a crisis. North Carolina student performance on the 1992 assessment in grade 8 mathematics was below that in the Southeast for both black and white students and below that in the nation for white and American Indian students, while slightly higher for black students. For fourth grade mathematics and reading, comparison of performance between both black and white students in North Carolina with the Southeast and the nation is mixed, but generally scores are very close. In all cases, however, scores of North Carolina blacks and American Indian students are significantly lower than scores for whites.

National Assessment of Educational Progress - 1992
Average Proficiency by Race

Subject	North Carolina	Southeast	Nation
Grade 4 Reading			
White	222	221	224
Black	195	195	192
American Indian	204	***	206
Grade 4 Mathematics			
White	222	219	226
Black	191	190	191
American Indian	202	***	208
Grade 8 Mathematics			
White	266	269	276
Black	238	240	236
American Indian	***	***	254

***Sample size insufficient to permit a reliable estimate (fewer than 62 students).

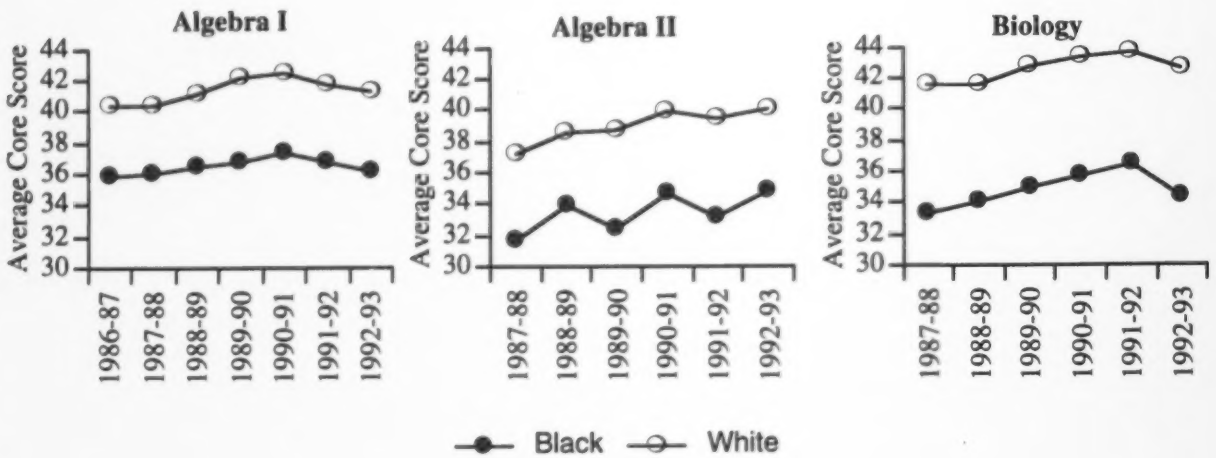
In North Carolina the gap in achievement levels between white and black students is evident in all subjects at all grade levels. In high school, participation in the selective mathematics and science courses impacts student preparedness for post-secondary education or employment in the current technological workplace. Algebra I particularly is viewed as the "gatekeeper" course for the mathematics sequence, and ultimately for future success.

For general academic courses, ethnic groups are proportionately represented: about 30 percent of all students are black, and about 30 percent of Biology and U.S. History students are black. However, black students are underrepresented in the more selective courses, representing just over 20 percent of students in Algebra II and Chemistry courses, and only 15 percent of Physics students.

The grade in which students take courses is also important, since the earlier the initial course in a sequence is taken, the more rigorous the total program can be. Students who take Algebra I in the eighth grade may take as many as four more advanced mathematics courses. Students who do not take Algebra I until the eleventh grade may only take one additional math course, and, in fact, cannot meet the requirement of three advanced mathematics courses for entrance into the University of North Carolina system. Black students comprise only 14 percent of eighth-grade Algebra I students and almost 46 percent of eleventh-grade Algebra I students.

Overall, performance of both black and white students on the End-of-Course tests has improved somewhat over the years. However, the gap in performance between black and white students has not improved.

Scores in Algebra I, Algebra II and Biology by Race



Reading

It is widely recognized that reading education must be improved significantly if today's students are to function effectively in all other parts of the school curriculum. Reading performance of the nation's students has been the subject of numerous reports over the years and likely will continue to be.

Instructional Practices

Slightly fewer fourth-grade students (20 percent) in North Carolina are being taught by teachers who had an undergraduate major in English, reading, and/or language arts than students across the nation (27 percent). However, in this state only 25 percent of students are being taught by teachers with at least a master's or education specialist's degree, compared to the national figure of 46 percent. NAEP results indicate that, for the most part, instructional practices are employed in North Carolina at about the same rates as in nation, as reported by teachers.

Teachers report the following practices are employed almost every day or at least once a week:

	N.C.	U.S.
Ask students to work in a reading workbook or on worksheet	76%	79%
Ask students to write about something they have read	82%	74%
Discuss new or different vocabulary	100%	98%
Ask students to talk about what they have read	86%	81%
Ask students to do a group activity or project about what they have read	23%	24%
Ask students to read aloud	95%	92%
Ask students to read silently	94%	98%
Give students time to read books they have chosen themselves	90%	93%
Sends or takes class to library	90%	85%

The amount of time North Carolina fourth grade students reported they spend watching television parallels national habits. As is the case nationwide, also, the average reading proficiency of those who watch television six or more hours a day is considerably lower than that of students who watch less than six hours.

Student Performance

Performance on state and national reading tests varies greatly from school system to school system, from school to school, and even from classroom to classroom. For example, 70 percent of the students in the top one-third of North Carolina's school systems scored at or above grade level on the state's grade 3-8 reading tests in 1993. For the bottom one-third, only 54 percent of the students scored at or above grade level. Although the data presented here are statewide totals, the differences from place to place should be kept in mind.

It should be noted that the data reported below represent the results of the first year that the NAEP Grade 4 Reading Assessment was given. Similarly, the North Carolina End-of-Grade Reading Tests were given for the first time in 1993. This information will serve as a baseline for comparisons in future years.

1992 National Assessment of Educational Progress
Percent of Fourth Grade Reading Students At or Above the Basic Level

Subgroup	North Carolina	Southeast	Nation
White	64%	63%	66%
Black	33%	31%	30%
American Indian	38%	Not Available	49%

Results of the 1992 NAEP 4th-Grade reading assessment indicate that a slightly higher percentage of North Carolina white students scored at or above the basic level than did their Southeast counterparts, but the percentage is lower than that for the nation as a whole. On the other hand, a higher percentage of black students scored at or above the basic level than did black students in the Southeast and in the nation. Fewer American Indian students scored at or above the basic level than nationwide. The gap between white and black performance remains high.

1993 North Carolina End-of-Grade Reading Tests
Percent of Students At or Above Grade Level

Grade	% Total	% Females	% Males	% Am Ind	% Black	% White	% Other
3	61	66	56	42	41	70	61
4	62	67	58	41	42	72	64
5	64	69	59	41	44	74	66
6	63	69	56	43	43	72	64
7	64	70	57	41	45	73	66
8	67	73	60	48	49	75	68

Other Publications

Information in this report was extracted from the following publications which are published annually and are available from the North Carolina Department of Public Instruction, 301 North Wilmington Street, Raleigh, NC 27601-2825:

How North Carolina Ranks Educationally Among the Fifty States (Information Center/Division of Communication Services, published annually)

Trends in North Carolina Education (Division of Innovation and Development Services, N.C. State Department of Public Instruction, April 1991)

North Carolina Public Schools Statistical Profile (Information Center/Division of Communication Services, published annually)

The North Carolina 1993 Scholastic Aptitude Test Report (Division of Testing Services; published annually)

Secondary Education in North Carolina: Report of Participation and Performance (Division of Testing Services; published annually)

Report of Student Performance—North Carolina Testing Program (Division of Testing Services; topical reports on elementary and middle school tests, published annually)

Other publications from which data were extracted for this report are as follows:

The National Education Goals Report—Building a Nation of Learners (U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402, published annually)

NAEP 1992 Mathematics State Report for North Carolina (Education Information Branch, Office of Educational Research and Improvement, U.S. Department of Education, 555 New Jersey Avenue, NW, Washington, DC 20208-5641, April 1993)

NAEP 1992 Reading State Report for North Carolina (Education Information Branch, Office of Educational Research and Improvement, U.S. Department of Education, 555 New Jersey Avenue, NW, Washington, DC 20208-5641, April 1993)

1990 Census of Population and Housing—Summary Tape File 3